File 635.1

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH ADMINISTRATION
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

Project	Date	Author

SUBJECT—

TITLE

FOREST INSECT SURVEY
EASTERN LASSEN AND SUSANVILLE AREAS
LASSEN COUNTY, CALIFORNIA
SEASON OF 1947

By

J. W. Bongberg

Forest Insect Laboratory
341 Giannini Hall, U. C.
Berkeley, California

December 11, 1947

INDEX No.—

U. S. GOVERNMENT PRINTING OFFICE 16—47272-1

U. S. DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
FOREST INSECT INVESTIGATIONS

FOREST INSECT SURVEY
EASTERN LASSEN AND SUSANVILLE AREAS
LASSEN COUNTY, CALIFORNIA
SEASON OF 1947

Approved by:

Entomologist, Acting In Charge

Submitted by:

J. W. DUNGBERG
Entomologist

Forest Insect Laboratory
341 Giannini Hall, U. C.
Berkeley 4, California

FOREST INSECT SURVEY

EASTERN LASSEN AND SUSANVILLE AREAS

LASSEN COUNTY, CALIFORNIA

SEASON OF 1947

FIELD EXAMINATION.

Personnel: Jack W. Bongberg, Robert T. Anderson, and Edward F. Blunt, Forest Insect Laboratory. Bureau of Entomology and Plant Quarantine, Berkeley, California.

Date: September 12 - 30, 1947

Methods: Roadside sample plots and reconnaissance.

AREAS EXAMINED.

A cruise was made of 23 roadside plots totalling 3,332 acres sampling 342,060 acres of virgin timber lands in the respective entomological reporting units and areas as shown on the appended map.

IMPORTANT FOREST INSECT PROBLEMS REVEALED BY THE SURVEY.

Bark beetle infestations in the stands of timber occur in all parts of the reporting areas, chiefly in the virgin stands and to a lesser degree in the cutover reserve.

INSECTS RESPONSIBLE FOR PINE DAMAGE IN 1946 AND 1947.

The western pine beetle (Dendroctonus brevicomis Lec.), the Oregon pine engraver (Ips oregoni Eichh.), and the California flathead borer, (Melanophila californica Van Dyke) in ponderosa pine; the Jeffrey pine beetle (droctonus jeffreyi Hopk.) in Jeffrey pine.

CHARACTER OF 1946 AND 1947 BARK BEETLE INFESTATIONS.

The 1946 pine beetle infestation was found to be of an endemic character throughout most of the timbered areas. Infested trees were quite widely scattered, and with few exceptions, were mature or overmature and of a high risk and decadent type. In the Dixie Valley Unit, in close proximity to the timber access road near Davis Creek, a rather general group killing by the Oregon pine engraver beetles occurred in young trees and poles. This infestation has somewhat intensified a rather severe rate of loss in

the mature and overmature pine stands in this area of high bark beetle hazard. The outbreak of engraver beetles reported in the timber southeast of Eagle Lake in 1946 1/ has apparently abated and no additional loss was encountered in 1947. Except as noted above, there were no other centers of epidemic loss or aggressive infestations noted in any of the area covered by the survey.

TREND OF BARK BEETLE INFESTATIONS.

The intensity of the infestation in 1946 and the trend of loss since the peak infestation in 1934 is given in Figure 1. The complete record of loss for 1947 will not be available until additional plot loss measurements are made in 1948. However, there is little or no indication from present incomplete records that the 1947 loss will vary to any degree from that of the 1946 season.

INSECT DAMAGE ON SAMPLE PLOTS IN 1946.

An appraisal of the amount of loss caused by bark beetles is obtained annually by measuring the killed trees on permanent sample plots throughout the forested areas. A summary of the number of trees, the board foot volume, and percent of green stand killed during 1946 is given in Table 1. The Table indicates that the severity of loss was quite variable but confined primarily in ponderosa pine. In general, the loss measurements did not differ greatly from the record obtained during 1945 except along the west portion of the Eastern Lassen Area in the Nigger Spring, Halls Flat, Butte Creek, Bogard Buttes, and Stephens Ranch Units where higher losses were noted.

ESTIMATED 1946 BARK BEETLE DAMAGE IN VIRGIN PINE STANDS.

Damage and loss of timber as a result of attack by bark beetles in virgin pine stands on the Eastern Lassen and Susanville Areas during 1946 is estimated at 15,640,000 board feet. This loss is approximately 0.4 percent of the merchantable green stand volume. The distribution of the 1946 loss estimates on the entomological units and reporting areas is given in Table 2.

BARK BEETLE DAMAGE IN 1947.

Complete records of loss for the 1947 season will not be obtained until the respective sample plots are re-cruised during 1948. Because of the incomplete records, no attempt will be made to estimate the total current loss on units or areas. However, sufficient data is now available to appraise generally the infestations noted. The increased bark beetle activity in the Butte Creek Unit which began in 1946 as a result of the severe windthrow in that area is continuing. The average of measured loss on four 160-acre plots sampling this area amounted to 65 board feet per acre. Also, in the Halls Flat country, and east to Crater Mountain, current loss

is above that which occurred in 1946 and 1945. The current loss in these areas is not of epidemic proportions but will bear watching to detect continued aggressiveness and possible epidemic conditions.

CURRENT BARK BEETLE DAMAGE IN CUTOVER RESERVE STANDS.

With the exception of the detailed loss records being maintained on various methods-of-cutting areas at the Blacks Mountain Experimental Forest, and a single sample on the Willard Creek Unit where light cutting was practiced in 1944--1946, no measurements of loss have been obtained in the cutover reserve. From purely cursory examination during travel to and from plots sampling losses in the virgin stands, no abnormal or severe insect-caused damage was noted.

Of interest, but minor in importance, was the occurrence of a tip-killing in the reserve trees near the edges of open sage and grass flats in the vicinity of Feather Lake. This tip-killing was local in character and occurred somewhat in strips not far removed from the edges of the flats. In most cases, only the upper 2 or 3 feet of the tree had been killed. It is doubtful if insects were in any way responsible for this injury as these trees showed evidence of top injury early in the season. It is suspected that transpiration resulting from unusually warm weather in the early spring months occurred without sufficient conduction and functioning of the root systems to prevent desication in the uppermost portion of the crowns. This contention has been supported by Dr. W. W. Wagener, Forest Pathologist, who examined the trees in October and could find no pathological organisms involved in the injuries.

INSECT CONTROL RECOMMENDATIONS.

The endemic infestation conditions which were found to prevail throughout the Eastern Lassen and Susanville Areas during 1947 do not warrant direct artificial measures for control. In fact, it is seldom advantageous to combat bark beetle populations in the extensive commercial eastside pine stands by methods directed only against the beetle populations. A reduction of the endemic loss caused by the bark beetles, as well as minimizing the threat of epidemic loss in these eastside pine areas, can best be accomplished by the selective removal of high risk and susceptible trees in a light sanitation-salvage cutting.

It is quite obvious that all of the remaining virgin pine stands of moderate and high bark beetle hazard cannot be treated by sanitation-salvage logging methods in any single season in the attempt to further reduce losses. However, the beetle-caused loss, which in the aggregate totalled 15½ million board feet last year during low endemic conditions, could be further reduced by expanding operations into the most hazardous areas.

The selection of areas to be cut by light sanitation-salvage methods depends to a large degree on the opportunities for logging as well as the overall objectives of management for the working circle. It is felt that the entomological problems with which the land-managing agencies are confronted could best be met by advance planning in contemplated sales and the making of an intensified cruise by the Forest Insect Laboratory in these possible sale areas to compare and determine beetle hazard and loss. Cutting could then be projected into areas where maximum benefits could be made in further reducing insect-caused loss.

TABLE 1. PINE TIMBER KILLED BY BARK BEETLES ON VIRGIN SAMPLE PLOTS.

EASTERN LASSEN AND SUSANVILLE AREAS
LASSEN COUNTY, CALIFORNIA

EASTERN LASSEN AREA

ENTOMOLOGICAL UNIT	R.D. STRIP NO.	TIMB. ACRES	HAZARD RATING	PINE STAND TREE SPP.	PINE STAND VOLUME Mb.m.	TIMBER KILLED 1946 NO. OF TREES	TIMBER KILLED 1946 VOLUME (b.m.)	TIMBER KILLED 1946 VOLUME p/ACRE	TIMBER KILLED 1946 % OF STAND
COBLE MOUNTAIN	1	160	V	PP	670	4	1530	9.6	0.2
				JP	110	1	80	0.5	0.1
				Total	780	5	1610	10.1	
	2	160	V	PP	670	3	2510	15.7	0.4
				JP	11	none	none	none	none
				Total	780	3	2510	15.7	
DIXIE VALLEY	25	80	V	PP	370	2	4080	51.	1.1
				JP	270	1	9	1.	0.1
				Total	640	3	4170	52.	
NIGGER SPRING	4	160	IV	PP	40	4	5840	36.	14.6
				JP	1170	none	none	non	none
				Total	1210	4	5840	36.	
	5	160	IV	PP	1680	none	none	none	none
				JP	61	1	90	5.	0.2
				Total	2290	1	90	5.	
BEAVER CREEK	3	160	IV	PP	780	none	none	none	none
				JP	62	1	2020	12.	0.3
				Total	1400	1	2020	12.	
	6	160	III-IV	PP	440	none	none	none	none
				JP	820	1	115	7.	0.1
				Total	1260	1	1150	7.	
GORDON VALLEY	24	80	III-IV	PP	1600	3	5530	69.2	0.4
				JP	910	none	none	none	none
				Total	2510	3	553	69.2	
	26	160	III-IV	PP	1730	1	28	1.	0.1
				JP	10	1	25	20.	0.5
				Total	1740	2	53	22.	
	39	72	IV	P	1600	3	84	67.	0.3
				JP	910	2	167	23.	0.1
				Total	2510	5	51	90.	
BUTTE CREEK	8	160	III	PP	530	1	15	25.	0.8
				JP	1270	none	none	non	none
				Total	1800	1	415	25.	
	9	160	III	PP	6	1	95	5.	0.3
				JP	11	none	none	none	none
				Total	17	1	9	5.	
	10	160	III	PP	1690	1	310	20.	0.2
				JP	1280	1	820	5.	0.1
				Total	297	2	3970	25.	
HALLS FLAT	7	160	III	PP	90	2	3710	23.	4.1
				JP	1160	1	26	20.	0.3
				Total	1250	3	7	43.	
	29	160	III-IV	PP	62	3	9	43.	1.1
				JP	76	none	none	non	none
				Total	138	3	9	43.	
HARVEY VALLEY	31	160	IV	PP	2280	3	5	16.	0.1
				JP	220	1	1210	7.	0.6
				Total	2500	4	790	23.	
BOGARD BUTTES	11	160	III	PP	47	1	14	8.	0.3
				JP	206	2	13	57.	0.4
				Total	253	3	10530	65.	
STEPHENS RANCH	14	160	III	PP	265	5	8730	54.	0.3
CRATER MOUNTAIN	30	152	III-IV	PP	2300	7	11490	75.	0.5
				JP	24	none	none	none	none
				Total	254	7	14	75.	
MERRILL FLAT	33	160	III-IV	PP	263	5	5580	34.	.2
				JP	18	none	none	non	none
				Total	2810	5	5580	34.	
	34	160	III-IV	PP	1600	1	1620	10.	.1
				JP	40	none	none	non	none
				SP	61	none	none	none	none
				Total	2610	1	1620	10.1	
TOTAL		3104		PP	370	50	74960	24.2	0.3
				JP	170	13	23580	7.6	0.2
				SP	400	none	none	none	none
				Total	42940	63	98540	31.8	0.2

SUSANVILLE AREA

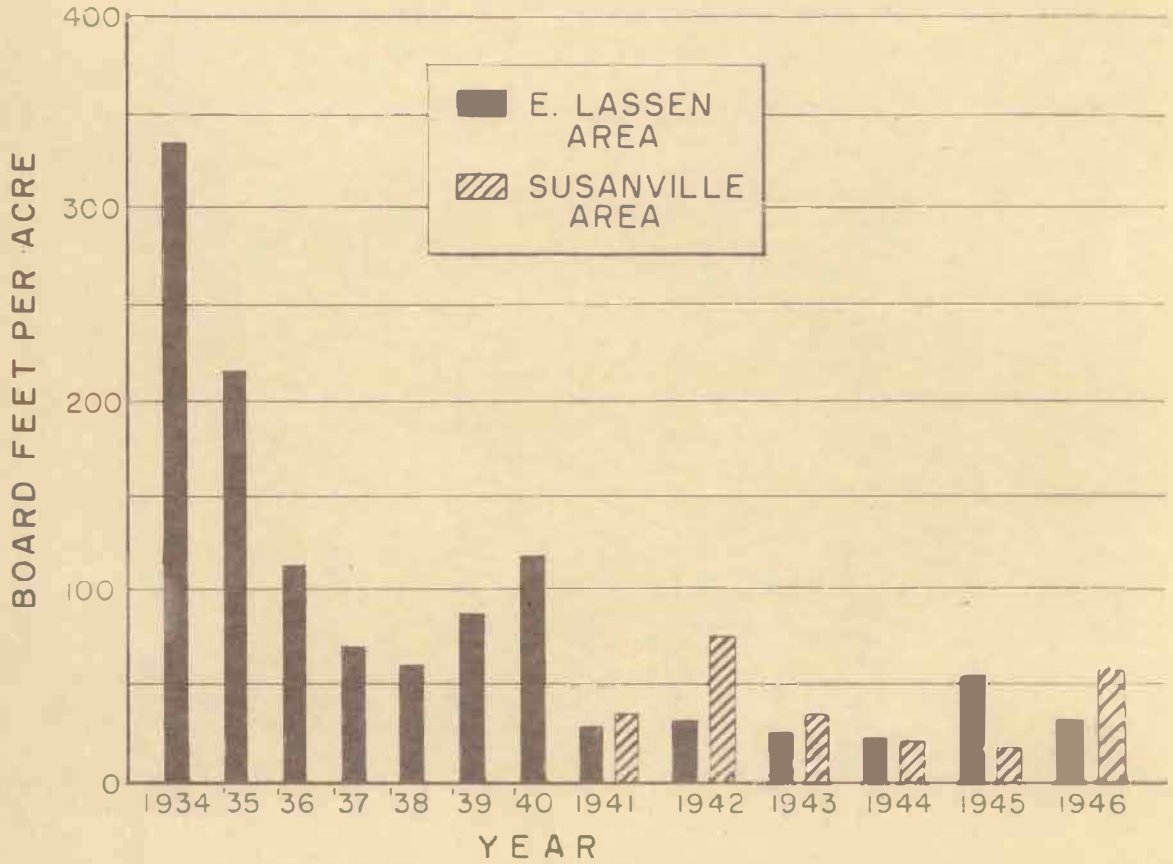
WILLARD CREEK	35	160	III-IV	PP	860	2	3200	19.	0.3
				JP	157	2	308	19.	0.2
				Total	243	4	6280	39.	
MERRILLVILLE	37	68	III-IV	PP	560	4	3510	51.	0.6
				JP	340	1	3530	51.	1.0
				Total	900	15	7040	103.	
TOTAL		228		PP	420	1	670	29.5	0.5
				JP	1910	3	6610	29.0	0.4
				Total	330	19	1320	8.5	0.
TOTAL OF EAST LASSEN AND SUSANVILLE AREAS		3332		PP	28,790	66	81,670	24.5	0.3
				JP	17,080	16	30,190	9.1	0.2
				SP	400	none	none	none	none
				Total	46,270	82	111,860	33.6	0.2

TABLE 2. ESTIMATED VIRGIN PINE TIMBER KILLED BY BARK BEETLES IN 1945.

EASTERN LASSEN AREA

ENTOMOLOGICAL UNITS	VIRGIN PINE STAND (January 1, 1947) ACREAGE	SPP.	MB.M.	PINE TIMBER KILLED 1946 NO. OF TREES	VOLUME MB.M.	B.M./AC.	% STAND
COBLE MOUNTAIN	19,980	PP	103,120	340	250	12.7	0.2
		JP	10,740	60	10	0.3	0.1
DIXIE VALLEY	17,050	PP	84,740	430	870	51.0	1.0
		JP	40,800	220	20	1.1	0.1
NIGGER SPRING	14,830	PP	73,110	190	270	18.3	0.4
		JP	86,320	40	40	2.8	0.1
BEAVER CREEK	19,930	PP	131,450	none	none	none	none
		JP	51,240	20	310	15.7	0.6
STRAYLOR LAKE	14,790	PP	98,370	90	30	1.8	0.1
		JP	50,460	90	300	20.3	0.6
GORDON VALLEY	30,730	PP	287,070	950	1440	46.7	0.5
		JP	112,590	30	650	21.3	0.6
BUTTE CREEK	26,620	PP	221,340	210	510	19.2	0.2
		JP	178,180	50	50	1.7	0.1
HALLS FLAT	11,280	PP	17,240	170	380	33.5	0.2
		JP	75,940	30	120	10.2	0.1
BLACKS MOUNTAIN	22,160	PP	253,800	2130	1630	73.5	0.6
		JP	95,910	20	30	1.2	0.1
HARVEY VALLEY	13,270	PP	165,430	370	320	24.2	0.2
		JP	23,390	120	150	11.4	0.6
CAVE MOUNTAIN	10,930	PP	97,680	390	560	51.1	0.6
		JP	26,350	150	130	11.6	0.5
BOGARD BUTTES	20,380	PP	230,230	390	650	31.7	0.3
		JP	97,010	140	580	28.5	0.5
STEPHENS RANCH	26,600	PP	388,220	500	840	31.7	0.2
		JP	11,920	190	760	28.5	6.4
CRATER MOUNTAIN	9,030	PP	123,740	410	680	75.6	0.5
		JP	21,620	none	none	none	none
LOGAN MOUNTAIN	1,120	PP	11,590	30	40	37.8	0.3
		JP	10,050	none	none	none	none
CAMPBELL BUTTE	3,710	PP	38,030	80	140	37.8	0.4
		JP	8,320	none	none	none	none
MERRILL FLAT	16,490	PP	174,900	410	540	32.6	0.4
		JP	44,640	none	none	none	none
		SP	30,970	none	none	none	none
BROCKMAN FLAT	10,590	PP	6,070	500	550	52.4	9.1
		JP	23,570	none	none	none	none
AREA SUBTOTALS	289,490	PP	2,506,130	7590	9700	33.5	0.4
		JP	969,050	1160	3150	10.9	0.3
		SP	30,970	none	none	none	none
SUSANVILLE AREA							
ROBBERS CREEK	8,760	PP	3,390	190	350	39.7	10.3
		JP	135,050	none	none	none	none
SUSAN RIVER	6,790	PP	66,520	80	140	19.9	0.2
		JP	24,800	90	130	19.3	0.5
WILLARD CREEK	9,390	PP	56,180	110	190	19.9	0.4
		JP	55,540	120	180	19.3	0.4
PIUTE CREEK	11,570	PP	114,170	1580	400	34.4	0.3
		JP	24,060	100	400	34.6	1.7
MERRILLVILLE	16,060	PP	153,110	1990	500	30.9	0.4
		JP	28,350	130	500	31.1	1.8
AREA SUBTOTALS	52,570	PP	393,370	3950	1580	30.1	0.4
		JP	267,800	440	1210	23.0	0.5
EASTERN LASSEN AND SUSANVILLE							
TOTAL OF ABOVE TWO AREAS	342,060	PP	2,899,500	11,540	11,280	33.0	0.4
		JP	1,236,850	1,600	4,360	12.7	0.4
		SP	30,970	none	none	none	none
		PP + JP + SP	4,167,320	13,140	15,640	45.7	0.4

FIGURE 1


400
300
200
100
0
BOARD FEET PER ACRE
E. LASSEN AREA
SUSANVILLE AREA
1934 '35 '36 '37 '38 '39 '40 1941 1942 1943 1944 1945 1946
YEAR

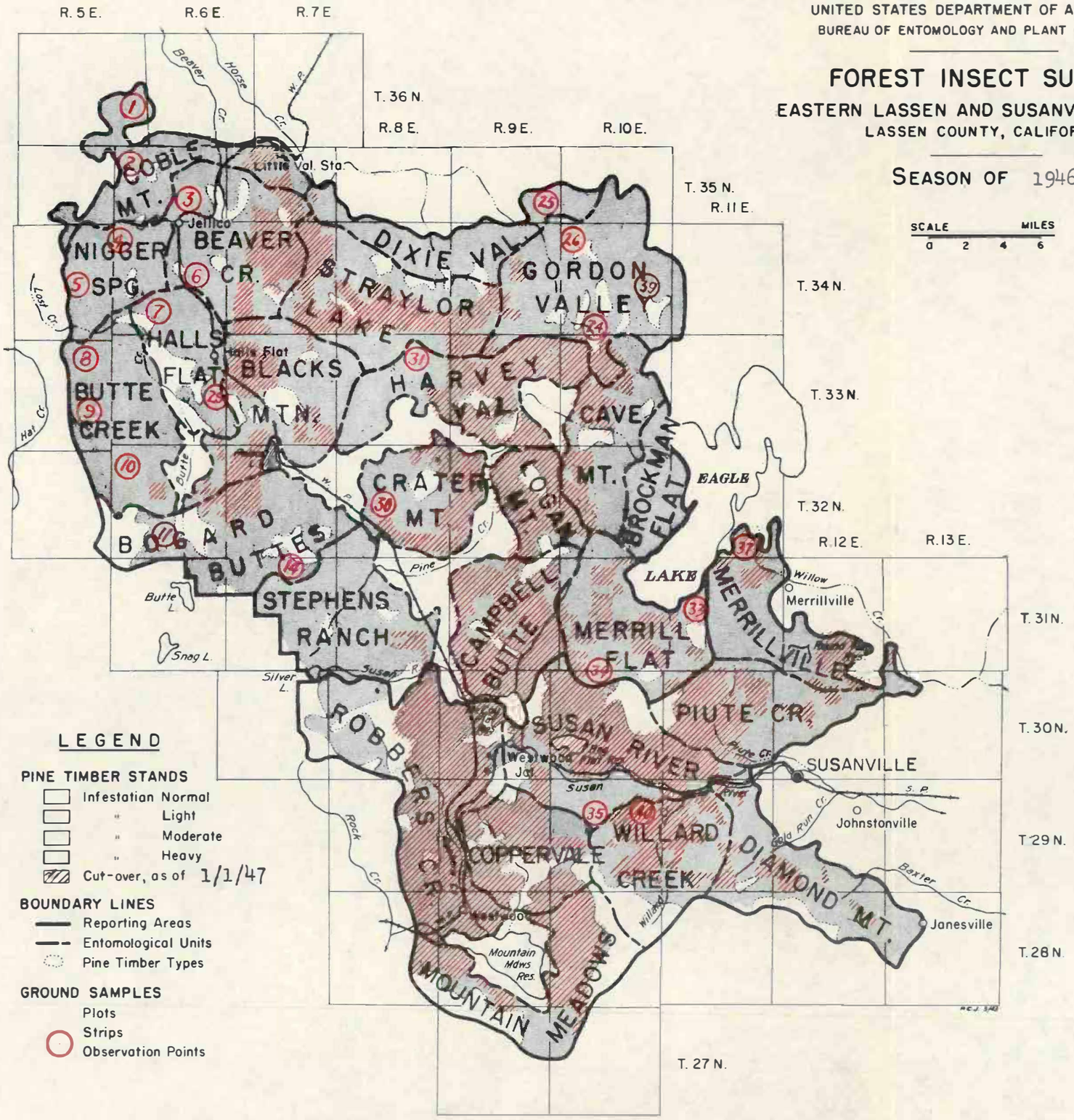
UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

FOREST INSECT SURVEY

EASTERN LASSEN AND SUSANVILLE AREAS

LASSEN COUNTY, CALIFORNIA

SEASON OF 1946



LEGEND

PINE TIMBER STANDS

- Infestation Normal
- " Light
- " Moderate
- " Heavy
- Cut-over, as of 1/1/47

BOUNDARY LINES

- Reporting Areas
- Entomological Units
- Pine Timber Types

GROUND SAMPLES

- Plots
- Strips
- Observation Points

Sent to:

(1) F.C.C.
(1) L.O.
(1) Lassen Supervisor
(2) F.G.S. Co. - Tom Oliver
(1) Lassen Lumber & Box Co.
(2) Swede Nelson

---

(1) File
(1) JuLB
(5) Extras
Deputy State Forester, Redding